U.S. Department of the Interior
Bureau of Land Management

Standards Determination Document

Forest Moon (01010) Grazing Allotment

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Location: Nye County, Nevada

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STANDARDS DETERMINATION DOCUMENT
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Introduction

The Standards and Guidelines for Nevada's Mojave-Southern Basin Area were developed by the Mojave-Southern Basin Area Resource Advisory Council (RAC) and approved in 2006. Standards and guidelines are likened to objectives for healthy watersheds, healthy native plant communities, and healthy rangelands. Standards are expressions of physical and biological conditions required for sustaining rangelands for multiple uses. Guidelines point to management actions related to livestock grazing for achieving the standards.

This Standards Determination Document evaluates and assesses livestock grazing management achievement of the Standards and conformance with the Guidelines for the Nevada's Mojave-Southern Great Basin Area for the Forest Moon Allotment in the Ely District. This document does not evaluate or assess achievement of the Wild Horse and Burro or the Off Highway Vehicle Standards or conformance to their respective Guidelines.

The Forest Moon Allotment encompasses approximately 108,273 public land acres (Map 1, "Forest Moon Allotment Map" (p. 27)). The grazing permit area occurs entirely within Nye County, and is situated approximately 40 miles southwest of Lund, Nevada. The western portion of this allotment borders the Battle Mountain BLM District and Forest Service lands while the eastern portion borders the Wayne E. Kirch Wildlife Management Area. The area stretches from the Quinn Mountain Range in the west out into the White River Valley. This allotment occurs largely in the White River Central Watershed with a small portion in the Garden Valley Watershed. The White River Sheep Trail also crosses the Forest Moon Allotment.

The Forest Moon Allotment is dominated by Inter-Mountain Basins Big Sagebrush Shrublands with Great Basin Pinyon-Juniper Woodlands, Inter-Mountain Basins Mixed Salt Desert Scrub, and Great Basin Xeric Mixed Sagebrush Shrublands. Dominate species of these plant communities include Wyoming big sagebrush (*Artemisia tridentata* ssp. *wyomingensis*), pinyon-juniper (*Pinus monophylla - Juniperus osteosperma*), witnerfat (*Krascheninnikovia lanata*), and black sagebrush (*Artemisia nova*). Small areas of greasewood (*Sarcobatus vermiculatus*) plant communities also occur in the allotment.

In 2006, the Horse Fire (58 acres) and a portion of the Sherwood Fire (about 700 acres) burned in the Forest Moon Allotment (Map 4, "Forest Moon Allotment, Fire History Map" (p. 30)). These burned areas were closed to livestock grazing at that time and have remained closed to date. Both of these burned areas were re-seeded during post-fire rehabilitation and stabilization. An unnamed fire in 1986 occurred entirely within the Forest Moon Allotment. Portions of the 1999 Sellem Fire (about 15 acres), portions of the 1997 Cold Creek Fire (about 60 acres), and portions of an unnamed fire in 1984 (about 200 acres) also burned into the allotment.

The Forest Moon Allotment provides habitat for elk *(Cervus canadensis*), mule deer (*Odocoileus hemionus*), and pronghorn (*Antilocapra americana*), with crucial winter mule deer habitat. There are also areas of unoccupied desert bighorn sheep (*Ovis canadensis nelsoni*) habitat. The allotment provides habitat for animals such as coyotes (*Canis latrans*), rabbits (*Lepus* spp. and *Sylvilagus* spp.), badgers (*Taxidea taxus*), bobcats (*Lynx rufus*), grey and red foxes (*Urocyon cinereoargenteus* and *Vulpes vulpes*), sagebrush obligate birds such as sage sparrow (*Amphispiza belli*), and other small mammals, reptiles, and invertebrates. Forest Home Creek flows through the

allotment and provides habitat for some species of fish. Also, several other species of migratory birds are known to have a distribution that overlaps with the allotment.

BLM Special Status Species habitats known to occur on the Forest Moon Allotment include Greater sage-grouse (*Centrocercus urophasianus*), White River catseye (*Cryptantha welshii*), Sunnyside green gentian (*Frasera gypsicola*), and Tiehm blazingstar (*Mentzelia tiehmii*). The Moorman White River springfish (*Crenichthys baileyi thermophilus*), a BLM sensitive species, is known to occur at Moon River Spring on private lands within the allotment. Potential pygmy rabbit (*Brachylagus idahoensis*) habitat also occurs across much of the allotment.

A portion of the Golden Gate Wild Horse Herd Area (HA) occurs within the Forest Moon Allotment and the White River Wild Horse HA is adjacent to the northwestern allotment boundary (Map 3, "Forest Moon Allotment, Wild Horse Herd Areas Map" (p. 29)). In 2009, a wild horse gather occurred across both of these HAs . Wild horse use has occurred throughout the entire allotment, generally wintering at lower elevations and summering in the higher elevations.

The current term grazing permit 2700102 on the Forest Moon Allotment is issued for the period 01/01/2007 to 12/31/2011 and is summarized in Table 1, "Summary of the Current Grazing Permit 2700102" (p. 2).

Table 1. Summary of the Current Grazing Permit 2700102

Allotment Name and Number	Livestock Number/Kind	Grazing Period Begin End	% Public Land[a]	Type Use	AUMs[b]
Forest Moon 01010	113 Cattle	06/01 to 03/31	100	Active	1131
Forest Moon 01010	570 Sheep	01/01 to 03/31	100	Active	341
Forest Moon 01010	570 Sheep	08/16 to 10/15	100	Active	229
Forest Moon 01010	570 Goats	01/01 to 03/31	100	Active	341
Forest Moon 01010	570 Goats	08/16 to 10/15	100	Active	229

Allotment AUMs Summary			
Allotment Name	**ACTIVE AUMS**	**SUSPENDED AUMS**	**GRAZING PERMITTED USE**
Forest Moon	2263	47	2310

[a]% Public Land is the percent of public land for billing purposes.

[b]AUMs may differ from Active Permitted Use due to a rounding difference with the number of livestock and the period of use.

Current livestock management practices for 2700102 have been implemented since 2000 Grazing Permit Renewal and Livestock Conversion Environmental Assessment and the 1996 Final Multiple Use Decision for the Forest Moon Allotment. This grazing preference was also transferred to the current permittee in 2004. This grazing preference is currently being used in conjunction with a U.S. Forest Service summer grazing permit and a winter grazing lease with the State of Nevada as well as private lands. The Forest Moon Allotment is being grazed in late spring and fall by cattle. Prior to acquiring the State grazing lease, this allotment was used as winter range. The sheep and goat grazing portions of this authorization have been in non-use for several years.

Monitoring data on this allotment has been collected at key areas which have been established throughout approximately the past 30 years. A summary of monitoring data for the Forest Moon Allotment is in *Appendix A—Data Summary* (p. 18).

Part 1. Standard Achievement Review

Standard 1. Soils

Watershed soils and stream banks should have adequate stability to resist accelerated erosion, maintain soil productivity, and sustain the hydrologic cycle.

Soil indicators:

- Ground cover (vegetation, litter, rock, bare ground);
- Surfaces (e.g., biological crusts, pavement); and
- Compaction/infiltration.

Riparian soil indicators:

- Stream bank stability.

All of the above indicators are appropriate to the potential of the ecological site.

	Determination:
X	Achieving the Standard
	Not Achieving the Standard, but making significant progress towards achieving
	Not Achieving the Standard, and not making significant progress toward standard

	Guidelines Conformance:
X	In conformance with the Guidelines
	Not in conformance with the Guidelines

Conclusions:

Monitoring data, field observations, and photo documentation indicate that the Forest Moon Allotment has ground cover, soils surfaces, and stream bank stability appropriate to the potential of the site. Site potential was determined from Ecological Site Descriptions (ESDs) and general knowledge of local ecosystems. Soils are being protected and stabilized by vegetation, litter, rocks, and biological crusts (Cover data is summarized in Table 7, "Forest Moon Allotment Ground Cover 2010" (p.)).

Key area FM-1 occurs on a Linoyer-Kunzler soil association (3974) and typically possesses a fine sandy loam to gravelly loam soil texture (NRCS 2002). The expected vegetative ground cover for this site is 10–20 percent. Monitoring data indicate that this key area has a vegetative cover of 37 percent with a litter cover of 14 percent and a biological crust cover of 3 percent.

Key area FM-2 occurs on a Palinor-Parisa soil association (3302) and typically possesses a gravelly loam soil texture (NRCS 2002). The expected vegetative ground cover for this site is 15–20 percent. Monitoring data indicate that this key area has a vegetative cover of 44 percent with a litter cover of 16 percent, a biological crust cover of 1 percent, and a rock cover of 24 percent.

Key area FM-3 occurs on a Handpah-Palinor-Parisa soil association (3334) and typically possesses a gravelly loam soil texture (NRCS 2002). The expected vegetative ground cover for this site is 15–20 percent. Monitoring data indicate that this key area has a vegetative cover of 40 percent with a litter cover of 9 percent, a biological crust cover of 15 percent, and a rock cover of 12 percent.

Key area FM-4 also occurs on a Linoyer-Kunzler soil association (3974) and typically possesses a fine sandy loam to gravelly loam soil texture (NRCS 2002). The expected vegetative ground cover for this site is 10–20 percent. Monitoring data indicate that this key area has a vegetative cover of 29 percent with a litter cover of 19 percent and a rock cover of 1 percent.

Four random monitoring points within sage-grouse habitat on the northeastern portion of the Forest Moon Allotment have also had cover data collected in 2010. These data indicate vegetative cover of 28–35 percent with litter cover of 8–19 percent, rock cover of 1–2 percent, and biological crust cover of 0–23 percent.

The 2006 Horse and Sherwood Fires have lowered the percent ground cover on these burned portions of the Forest Moon Allotment. The 2006 Horse Fire has a perennial species cover of 5 percent in the seeded portion, 6 percent in the unseeded portion, and 10 percent in the AA plots (additional aerial seeding plots) in 2009. This burn had a three-year recovery objective of 15 percent ground cover. The 2006 Sherwood Fire has a perennial species covers ranging from 4 to 14 percent in 2009, depending on the seeding treatment. This burn had a three-year recovery objective of 5 percent ground cover.

Soil compaction and displacement are likely near watering sites and trails used by livestock. The degree and magnitude of impacts from livestock use are expected to be localized near trails and watering sites and are not expected to alter soil productivity or increase erosion potential. Impacts to localized physical soil characteristics would not alter the infiltration or percolation rates of the soils on the Forest Moon Allotment. Sandy loam and gravelly sandy loam soil texture are found throughout the allotment. As such, impacts to the soil resources resulting from livestock grazing would not affect the physical, chemical, or biological processes on or within the soil horizons.

Soil movement forces at work within the allotment were noted as soil creep, wind, and water erosion. Soil creep is a natural mechanism dependent upon slope and gravity. Wind erosion occurs when velocity attains a critical speed where it can mobilize certain size soil particles and again is a natural process. Water erosion is found near draws and natural flow path locations and is dependent upon the variable of precipitation events as to its location, intensity, duration, and frequency. The ability of water to move particles is, like wind, related to velocity and particle size.

Two spring-fed riparian systems are known to exist on the Forest Moon Allotment. Forest Home Creek is a lotic system of approximately 1.5 miles. South Horse Spring riparian area is a fenced, lentic system of approximately 0.5 acres. Both of these areas exhibit good bank stability.

Soils and stream banks across the Forest Moon Allotment exhibit the ability to resist accelerated erosion, maintain soil productivity, and sustain the hydrologic cycle given the current ground cover, soil surfaces, and stream bank stability. Therefore the Forest Moon Allotment is meeting the Soils Standard.

Standard 2. Ecosystem Components

Watersheds should possess the necessary ecological components to achieve state water quality criteria, maintain ecological processes, and sustain appropriate uses. Riparian and wetlands vegetation should have structural and species diversity characteristic of the stage of stream channel succession in order to provide forage and cover, capture sediment, and capture, retain, and safely release water (watershed function).

Upland Indicators:

- Canopy and ground cover, including litter, live vegetation, biological crust, and rock appropriate to the potential of the ecological site.
- Ecological processes are adequate for the vegetative communities.

Riparian Indicators:

- Stream side riparian areas are functioning properly when adequate vegetation, large woody debris, or rock is present to dissipate stream energy associated with high water flows.
- Elements indicating proper functioning condition such as avoiding accelerating erosion, capturing sediment, and providing for groundwater recharge and release are determined by the following measurements as appropriate to the site characteristics:
  - Width/Depth ratio;
  - Channel roughness;
  - Sinuosity of stream channel;
  - Bank stability;
  - Vegetative cover (amount, spacing, life form); and
  - Other cover (large woody debris, rock).
- Natural springs, seeps, and marsh areas are functioning properly when adequate vegetation is present to facilitate water retention, filtering, and release as indicated by plant species and cover appropriate to the site characteristics.

Water Quality Indicators:

- Chemical, physical and biological constituents do not exceed the state water quality standards.

The above indicators shall be applied to the potential of the ecological site.

Determination:

X	Achieving the Standard
	Not Achieving the Standard, but making significant progress towards achieving
	Not Achieving the Standard, and not making significant progress toward standard

Guidelines Conformance:

X	In conformance with the Guidelines
	Not in conformance with the Guidelines

Conclusion:

Ecological processes are defined by the Standards and Guidelines for Nevada's Mojave-Southern Great Basin Area (2006) as "Natural functions including the hydrologic cycle, the nutrient cycle, and energy flow" (see also 43 CFR 4180.1(b)). Proper ground cover is generally indicative of adequate ecological processes. Ground cover allows for soil surface stability and infiltration in the hydrological cycle so that water is able to continue to flow through the ecosystem. Litter and plant root systems return organic matter and other nutrients to the soil in the nutrient cycle. Vegetative cover also allows energy to continue to flow through the ecosystem because the plants capture the sun's energy converting it into usable forage for herbivores in the food chain. Fire cycles are also a natural part of the ecosystems of the Forest Moon Allotment.

Monitoring data, field observations, and photo documentation indicate that upland sites on the Forest Moon Allotment are maintaining appropriate ground cover for the ecological sites. Upland site cover data is summarized above under Standard 1 (Soils) and in Table 7, "Forest Moon Allotment Ground Cover 2010" (p.).

Monitoring data, field observations, and photo documentation indicate that riparian areas on the Forest Moon Allotment are able to dissipate energy associated with high water flows. Riparian areas were assessed using the Proper Functioning Condition (PFC) method.

Forest Home Creek supports a largely herbaceous riparian area with some small patches of cottonwood or willow trees. Portions of this stream channel have been ditched for irrigation water conveyance. This area was found to be in proper functioning condition in 2010 because there is adequate vegetation (cover and composition) to protect stream banks and dissipate energy from high flow events. Irrigation water diversion was identified as the greatest risk factor for this riparian area.

South Horse Spring supports a fenced, lentic riparian area with a shrub/grass plant community. This area was found to be in proper functioning condition in 2010 because there is adequate vegetation (cover and composition) to protect banks and dissipate energy from overland flow.

The Forest Moon Allotment possess the necessary ecological components to maintain ecological processes and sustain watershed function as indicated by ground cover and riparian area functionality. Therefore the Forest Moon Allotment is meeting the Ecosystem Components Standard.

Standard 3. Habitat and Biota

Habitats and watersheds should sustain a level of biodiversity appropriate for the area and conducive to appropriate uses. Habitats of special status species should be able to sustain viable populations of those species.

Habitat Indicators:

- Vegetation composition (relative abundance of species);
- Vegetation structure (life forms, cover, height, and age classes);
- Vegetation distribution (patchiness, corridors);
- Vegetation productivity; and
- Vegetation nutritional value.

Wildlife Indicators:

- Escape terrain;
- Relative abundance;
- Composition;
- Distribution;
- Nutritional value; and
- Edge-patch snags.

The above indicators shall be applied to the potential of the ecological site.

	Determination:
X	Achieving the Standard
	Not Achieving the Standard, but making significant progress towards achieving
	Not Achieving the Standard, and not making significant progress toward standard

	Guidelines Conformance:
X	In conformance with the Guidelines
	Not in conformance with the Guidelines

Threatened and Endangered Species: None are known to exist on the Forest Moon Allotment

BLM Sensitive Species (Map 6, "Forest Moon Allotment, Special Status Species Map" (p. 32)):

Greater Sage-Grouse—The Forest Moon Allotment lies within the Quinn Sage-Grouse Population Management Unit (PMU). One sage-grouse lek is located in the eastern portion of the allotment. Most of the allotment has been identified as nesting, summer (brood-rearing), and winter habitat for the birds. This area is in the extreme southern portion of the range for these birds therefore only provides marginal habitat.

Sage-grouse often nest in suitable habitat within three miles of a lek site. The sage-grouse breeding and nesting period is generally considered to be approximately March 15 through May 31. The brood-rearing period is generally considered to be June 1 through October 31. The wintering period is generally considered to be November 1 through March 14.

Connelly et al. (2000) sets forth guidelines for productive sage-grouse habitat in what is commonly known as the "Connelly Guidelines." Guidelines applicable to the sage-grouse habitats found on the Forest Moon Allotment are summarized in Table 2, "Characteristics of sagebrush rangeland needed for productive sage-grouse habitat (Connelly 2000)" (p. 7).

Table 2. Characteristics of sagebrush rangeland needed for productive sage-grouse habitat (Connelly 2000)

	Breeding		Brood-rearing		Winter (exposed above snow)	
	Height (inches)	Canopy Cover (%)	Height (inches)	Canopy Cover (%)	Height (inches)	Canopy Cover (%)
Sagebrush	11–32	15–25	16–32	10–25	10–14	10–30
Grass/Forb	>7	≥15	variable	>15	N/A	N/A
% seasonal habitat needed with these conditions	>80%		>40%		>80%	

When compared to sage-grouse habitat monitoring data collected on the Forest Moon Allotment (Table 8, "Sage-Grouse Habitat Data on the Forest Moon Allotment, 2010" (p. 20)), these guidelines are generally not being met due to high sagebrush cover and limited understory. This data was collected at existing key areas in sage-grouse habitat (FM-2 and FM-3) as well as four random points in the northeastern portion of the allotment. Random data points were located within four miles of the identified lek. Birds from this lek likely use habitat on the Kirch Wildlife Management Area as well.

Sunnyside Green Gentian—The Nevada Natural Heritage Program (NNHP) has 10 documented occurrences of the Sunnyside green gentian in Nevada (2010), one of which is on the Forest Moon Allotment. However, the 2005 and 2007 plant surveys did not report this species in the project area. This species is found in open, dry, whitish, alkaline, often salt-crusted and spongy silty-clay soils. Habitat includes calcareous flats and barrens and cushion-plant associations surrounded by sagebrush, greasewood, and occasionally barberry and swamp cedar vegetation.

The statewide population is estimated at over 203,000 individuals (Morefield 2001). Conflicting reports suggest that cattle may graze on this species.

Tiehm Blazingstar—Several occurrences of the Tiehm blazingstar have been documented on the Forest Moon Allotment. The current status of these populations are unknown. This species is found mostly on white calcareous knolls and bluffs with scattered perennials. It is endemic to Nevada and the statewide population is estimated at over 14,000 individuals (Holmgren and Holmgren 2002). The NNHP has seven documented occurrences of the Tiehm blazingstar in Nevada (2010).

Eastwood Milkweed—Several occurrences of the Eastwood milkweed have been documented on the Forest Moon Allotment. The current status of these populations are unknown. This species is found in open areas with basic soils generally barren and lacking competition. Habitats include calcareous clay knolls, sand, carbonate or basaltic gravels, or shale outcrops. This species is frequently found in small washes or other moisture-accumulating microsites, in the shadscale, mixed-shrub, sagebrush, and lower pinyon-juniper zones. Major treats to this species includes trampling by cattle and habitat loss to mining and road construction. It is endemic to Nevada and the statewide population is estimated at over 1,475 individuals (Morefield 2001). The NNHP has 32 documented occurrences of this species in Nevada (2010).

Charleston Grounddaisy—Several occurrences of the Charleston grounddaisy have been documented on the Forest Moon Allotment. The current status of these populations are unknown. Its habitat is open, sparsely vegetated calcareous areas, on shallow gravelly carbonate soils on slopes and exposed knolls. Habitat areas include knolls of white, alkaline, calcareous, silty lacustrine deposits in the upper shadscale/mixed-shrub and lower sagebrush zones. It is endemic to Nevada and, statewide, covers over 17.8 acres (Moorfield 2001). The NNHP has 45 documented locations of this species in Nevada (2010).

White River Catseye—Several occurrences of the White River catseye have been documented on the Forest Moon Allotment. The current status of these populations are unknown. This species is found in dry, open, sparsely vegetated outcrops often knolls or gravelly hills. Habitat includes sandy to silty or clay soils, whitish calcareous or carbonate deposits, and adjacent habitats. The species appears to tolerate or even increase with transient disturbances within its habitat, such as animal trampling and roadside maintenance. It is endemic to Nevada and the statewide population is estimated at over 44,000 individuals (Morefield 2001). The NNHP has 42 documented occurrences of the White River catseye in Nevada (2010).

Pygmy Rabbit—Pygmy rabbits have not been documented on the Forest Moon Allotment however potential habitat for this species occurs across the allotment. Pygmy rabbit habitat is defined by areas with dense, tall sagebrush for food and cover and deep, loose soils for digging burrows. On the Forest Moon Allotment, the Kunzler soil and Parisa soil have a high suitability rating for pygmy rabbit habitat. This rating is a general guide considering the soil and plant composition characteristics that influence pygmy rabbit habitat from soil survey data. The high rating indicate that there are no restrictions in these characteristics and potential habitat is favorable (NRCS 2011). The current condition of this habitat is unknown.

Conclusion:

Monitoring data, field observations, and photo documentation indicate that vegetative structure, distribution, and productivity vary across the Forest Moon Allotment and are appropriate to the potential of the sites. Vegetative composition across the allotment indicates a stable, shrub

dominate state. Site potential was determined from ESDs and general knowledge of the local ecosystems.

Key areas FM-1 and FM-4 occur on a Silty (028BY013NV) ecological site. The key vegetative species of this ecological site are winterfat and Indian ricegrass. Key areas FM-2 and FM-3 occur on a Shallow Calcareous Loam (028BY011NV) ecological site. The key vegetative species of this ecological site are black sagebrush, Indian ricegrass, and needleandthread. The variety of plant communities present across the allotment are indicative of proper vegetation distribution for the size and location of the Forest Moon Allotment. This allotment reaches from the White River Valley bottom through the foothills of the Grant Range including the Horse Spring Hills. The topography and elevations of this land area facilitate this distribution. Additional patchiness is created from the natural fire history of the foothills area.

The total annual production expected on the silty ecological site (FM-1 and FM-4) is 350 to 700 pounds per acre. At FM-1, the total annual production was measured at 1,824 pounds per acre in 2010 and 438 pounds per acre in 1989. At FM-4, the total annual production was measured at 1,962 pounds per acre in 2010. The total annual production expected on the shallow calcareous loam site (FM-2 and FM-3) is 250 to 600 pounds per acre. At FM-2, the total annual production was measured at 1,333 pounds per acre in 2010, 1,268 pounds per acre in 2006, and 350 pounds per acre in 1989. At. FM-3, the total annual production was measured at 894 pounds per acre in 2010 and 203 pounds per acre in 2007. Vegetative production across the Forest Moon Allotment varies based largely on annual precipitation. In 2010, 2006, and 1978, annual rainfall was about average, while in 2007 and 1989, annual rainfall was below average. This is reflected in the difference in annual production data collected at key areas across the allotment. The range of vegetative production measured across the allotment is generally higher than expected.

Vegetative composition by weight measured at FM-1 in 2010 was four percent forbs, and 96 percent shrubs. Vegetative data collected at this site in 1989 and 1978 shows similar shrub dominance with a small amount of grasses and forbs. Vegetative composition by weight measured at FM-2 in 2010 was three percent grasses, three percent forbs, and 94 percent shrubs. Vegetative data collected at this site in 2006 and 1978 also shows shrub dominance while data from 1989 shows 33 percent grasses, two percent forbs, and 64 percent shrubs. Vegetative composition by weight measured at FM-3 in 2010 was a trace amount of grasses, two percent forbs, and 97 percent shrubs. Vegetative data collected at this site in 2007, 1989 and 1978 shows similar shrub dominance with a small amount of grasses and forbs. Vegetative composition by weight measured at FM-4 in 2010 was one percent grass, two percent forbs, and 98 percent shrubs. Vegetative data collected at this site in 1978 shows a similar composition.

This key area analysis indicates that the Forest Moon Allotment is in a shrub dominate state. There has been very little change in the vegetative composition since the late 1970s indicating that this is a stable state on this allotment. Given the long-standing stability of these conditions, they likely represent the potential of this vegetative state of the respective ecological sites.

The Forest Moon Allotment is maintaining appropriate vegetative characteristics for the current potential of the area. Vegetative structure and distribution is as expected across the allotment, vegetative production is higher than expected, and vegetation composition is as expected given the current vegetative state of the ecological sites. The allotment is also supporting populations of special status species. Therefore the Forest Moon Allotment is meeting the Habitat and Biota Standard.

PART 2. ARE LIVESTOCK A CONTRIBUTING FACTOR TO NOT MEETING THE STANDARDS? SUMMARY REVIEW:

According to the Standards and Guidelines for Nevada's Mojave-Southern Great Basin Area, it must be determined if livestock grazing is a significant factor in the non-attainment of the Standards and Guidelines (BLM 2006).

The Soils Standard, the Ecosystem Components Standard, and the Habitat and Biota Standard are being achieved on the Forest Moon Allotment.

PART 3. GUIDELINE CONFORMANCE REVIEW AND SUMMARY

Current grazing use is in conformance with all applicable Guidelines as provided in Nevada's Mojave-Southern Great Basin Standards and Guidelines on the Forest Moon Allotment.

PART 4. MANAGEMENT PRACTICES TO CONFORM WITH GUIDELINES AND ACHIEVE STANDARDS

Management Recommendations:

1. Continue rangeland monitoring of the Forest Moon Allotment for livestock in compliance with proper allowable use levels and vegetative conditions.

2. Continue to allow livestock grazing as follows (the same as currently permitted):

Table 3. Recommended Grazing for the Forest Moon Allotment

Allotment Name and Number	Livestock Number/Kind	Grazing Period Begin End	% Public Land[a]	Type Use	AUMs[b]
Forest Moon 01010	113 Cattle	06/01 to 03/31	100	Active	1131
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Allotment AUMs Summary			
Allotment Name	**ACTIVE AUMS**	**SUSPENDED AUMS**	**GRAZING PERMITTED USE**
Forest Moon	2263	47	2310

[a]% Public Land is the percent of public land for billing purposes.

[b]AUMs may differ from Active Permitted Use due to a rounding difference with the number of livestock and the period of use.

Other Terms and Conditions:

- When sheep and goats are authorized during any one year, authorized use shall not exceed 566 AUMs of sheep use and 566 AUMs for goat use.
- If the entire preference for sheep and goat use is not applied for, cattle use can be applied for up to a total of 2,263 AUMs.

3. Establish maximum utilization levels on the Forest Moon Allotment as follows:

   a. Perennial native grasses: 50% of current year's growth

   b. Perennial shrubs and half-shrubs: 50% use on current annual production

   c. Livestock will be moved to another authorized pasture or removed from the allotment before utilization objectives are met or no later than 5 days after meeting the utilization objectives. Any deviation in livestock movement will require authorization from the authorized officer.

4. Reopen the Horse Fire burned area to livestock grazing. This would close out the Livestock Closure Agreement for this fire. The interdisciplinary team also recommends that no changes in management that will result in increased livestock concentration on the burn be made at this time (i.e. establishment of water haul site in the area, etc.). This is currently an area of light livestock use.

5. Consider installing drift fences in areas of common cattle drift along the allotment boundaries to aid in livestock management on the Forest Moon Allotment as well as the neighboring allotments. This would include extending the Sherwood Fire Fence to the east along the southern allotment boundary, fencing southwest from Murphy Meadows along the southeastern allotment boundary, and fencing along the north allotment boundary extending west from the Sunnyside Allotment Fence.

6. Consider improving the efficiency of the current ditch and reservoir water system by replacing it with a pipe and trough system. Also consider upgrading some of the current spring developments to provide more reliable stock water and protect riparian values, as appropriate. Also consider new stock water developments to further enhance livestock distribution across the Forest Moon Allotment.

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Appendix A—Data Summary

Key Areas and Ecological Sites

A key area is a relatively small portion of a pasture or allotment selected because of its location, use, or grazing value as a monitoring point for grazing use. It is assumed that key areas, if properly selected, will reflect the current grazing management over the pasture or allotment as a whole (NRCS 1997). Key areas represent range conditions, trends, seasonal degrees of use, and resource production and values. Table 4, "Forest Moon Allotment Key Areas" (p.) depicts key areas and their location within the Forest Moon Allotment as well as the ecological site associated with the key area and soil mapping unit of each site (Map 2, "Forest Moon Allotment Key Area Map" (p. 28), Map 7, "Forest Moon Allotment, Soils Map" (p. 33)). These key areas occur within the Soil Survey of Nye County Area, Nevada, Northeast Part (NV783; NRCS 2002).

An ecological site is a distinctive kind of land with specific physical characteristics that differs from other kinds of land in its ability to produce a distinctive kind and amount of vegetation (NRCS 1997). Ecological Site Descriptions (ESD) are used for inventory, evaluation, and management of native vegetation communities. The ecological site of a key area is determined based on several factors including soils, topography, and plant community.

Table 4. Forest Moon Allotment Key Areas

Key Area	Location	Ecological Site	Dominate Species from ESD	Soil Mapping Unit
FM-1	T06N R60E Sec. 9 1/4SW 1/4SW	Silty 8–10" P.Z. (028BY013NV)	winterfat and Indian ricegrass	3974—Linoyer-Kunzler association
FM-2	T06N R59E Sec. 11 1/4NE 1/4NW	Shallow Calcareous Loam 8–10" P.Z. (028BY011NV)	black sagebrush, Indian ricegrass, and needleandthread	3302—Palinor-Parisa association
FM-3	T05N R60E Sec. 30 1/4NW 1/4NE	Shallow Calcareous Loam 8–10" P.Z. (028BY011NV)	black sagebrush, Indian ricegrass, and needleandthread	3334—Handpah-Palinor-Parisa association
FM-4	T05N R59E Sec. 23 1/4SW 1/4NW	Silty 8–10" P.Z. (028BY013NV)	winterfat and Indian ricegrass	3974—Linoyer-Kunzler association

Licensed Livestock Use

Over the grazing seasons from 2001 to 2010, livestock active permitted use on the Forest Moon Allotment was 1,131 cattle AUMs, 570 sheep AUMs, and 570 goat AUMs. The grazing preference for 2704709 was transferred to 2700102 in 2004. Table 5, "Forest Moon Allotment Licensed Use Summary" (p. 19) summarizes the licensed use data for this time period.

Annual variation in livestock use has occurred for several reasons including various business decisions of the permittees, competition with wild horses and other herbivores, and annual forage availability.

Table 5. Forest Moon Allotment Licensed Use Summary

Grazing Year	Cattle Use		Sheep Use		Goat Use	
	Licensed Use (AUMs)	% Licensed Use of Permitted Use	Licensed Use (AUMs)	% Licensed Use of Permitted Use	Licensed Use (AUMs)	% Licensed Use of Permitted Use
2001	818	72%	114	20%	760	133%
2002	496	44%	0	0%	0	0%
2003	0	0%	0	0%	0	0%
2004	830	73%	0	0%	0	0%
2005	908	80%	0	0%	0	0%
2006	381	34%	0	0%	0	0%
2007	366	32%	0	0%	0	0%
2008	1014	90%	0	0%	0	0%
2009	617	55%	0	0%	0	0%
2010	348	31%	0	0%	0	0%

Utilization

Utilization is the estimation of the proportion of annual production consumed or destroyed by animals (Swanson et. al. 2006). The general utilization objective for all allotments in the Ely BLM District according to the Ely District Record of Decision and Approved Resource Management Plan (ROD/RMP; 2008) is to "Manage livestock grazing on public lands to provide for a level of livestock grazing consistent with multiple use, sustained yield, and watershed function and health" (Ely RMP, p. 85). The Nevada Rangeland Monitoring Handbook gives guidelines to determine the proper use levels by plant category (grasses, forbs, and shrubs) and by grazing season (spring, summer, fall, winter, yearlong). Proper use levels for all allotments are also implied by the Standards and Guidelines for Rangeland Health and Grazing Administration (1997).

Key Species Method (Cooperative Extension Service et. al. 1996) was used to collect utilization data on the Forest Moon Allotment. This data was generally collected at key areas but other data collection sites have been used. Table 6, "Utilization Data Summary, Forest Moon" (p.) summarizes utilization data collected since 2000. Utilization is for all herbivores (cattle, sheep, wild horses, wildlife, etc.)

Table 6. Utilization Data Summary, Forest Moon

Date Collected	Location	Vegetation Species	Utilization Class [a]	Measured Utilization	Notes
3/31/2009	FM-1	winterfat	slight	8%	measured 2008 grazing year use
7/25/2006	FM-1	winterfat	slight	16%	
		squireltail	moderate	54%	
4/2/2002	FM-1	Indian ricegrass	light	34%	
		squirreltail	slight	20%	
		winterfat	light	32%	
3/31/2009	FM-2	Indian ricegrass	light	36%	measured 2008 grazing year use
		needleandthread	light	22%	
7/25/2006	FM-2	Indian ricegrass	negligible	4%	
		squirreltail	negligible	1%	
3/31/2009	FM-3	black sagebrush	light	23%	measured 2008 grazing year use; horses nearby
		Douglas rabbitbrush	light	37%	
		squirreltail	slight	18%	

Date Collected	Location	Vegetation Species	Utilization Class [a]	Measured Utilization	Notes
6/28/2007	FM-3	Indian ricegrass	light	26%`	
4/2/2002	FM-3	Indian ricegrass	light	35%	
		squirreltail	slight	12%	
		bluegrass	slight	18%	

[a]negligible = 0–5%; slight = 6–20%; light = 21–40%; moderate = 41–60%; heavy = 61–80%; severe = 81–94%; extreme = 95–100%

Line-Point Intercept Cover Studies

Line-point intercept is a rapid, accurate method for quantifying soil cover, including vegetation, litter, rocks and biotic crusts. These measurements are related to wind and water erosion, water infiltration and the ability of the site to resist and recover from degradation (Herrick et al 2005). The results from this cover study are compared to the appropriate vegetative cover for each ecological site as indicated by the Natural Resources Conservation Service (NRCS) Rangeland Ecological Site Descriptions (ESD). Results are also compared to general known healthy rangelands.

Line-point intercept cover studies were conducted in 2010 at four key areas on the Forest Moon Allotment. Additionally, four random data collection points within sage-grouse habitat in the northeastern portion of the allotment had line-point intercept cover data collected in 2010. This data is all summarized in Table 7, “Forest Moon Allotment Ground Cover 2010” (p.).

Table 7. Forest Moon Allotment Ground Cover 2010

Key Area	Bare Ground	Ground Cover				ESD Veg. Cover
		Rock	Bio. Crust	Litter	Veg.	
FM-1	46%	0%	3%	14%	37%	10–20%
FM-2	15%	24%	1%	16%	44%	15–20%
FM-3	24%	12%	15%	9%	40%	15–20%
FM-4	51%	1%	0%	19%	29%	10–20%
SG-FM-01	49%	1%	7%	17%	26%	
SG-FM-04	37%	1%	23%	8%	31%	
SG-FM-05	51%	2%	0%	19%	28%	
SG-FM-06	47%	2%	1%	15%	35%	

Sage-grouse habitat monitoring data also used the line-point intercept method to collect information about canopy cover of shrubs and herbaceous understory (Table 8, “Sage-Grouse Habitat Data on the Forest Moon Allotment, 2010” (p. 20)). Key areas FM-2 and FM-3 were used as sage-grouse habitat monitoring points (SG-FM-02 and SG-FM-03, respectively) along with four random points within sage-grouse habitat in the northeastern portion of the Forest Moon Allotment. These data were collected in June 2010 which is the end of the sage-grouse nesting period and beginning of the brood-rearing period.

Table 8. Sage-Grouse Habitat Data on the Forest Moon Allotment, 2010

Sage-Grouse Habitat Monitoring Point	Sagebrush		Grass/Forb	
	Canopy Cover	Average Height (inches)	Canopy Cover	Average Height (inches)
SG-FM-01	18%	26	9%	8.5
SG-FM-02	43%	15	16%	8
SG-FM-03	33%	15.5	12%	2.5
SG-FM-04	31%	28	1%	7

SG-FM-05	27%	26	3%	3
SG-FM-06	37%	23	0%	—

Similarity Index and Ecological Condition

A similarity index is the percentage of a specific vegetation state plant community that is presently on the site (NRCS 1997). Similarity index is computed in reference to the potential native vegetation (PNV) and is an expression of how similar the existing plant community is to PNV. Given the stable, shrub-dominate vegetative state found on the Forest Moon Allotment, low similarity indexes are expected. Also note that PNV is not always the most desirable plant community to manage for. Similarity index is calculated as a percent composition by air dry weight. The site is inventoried to determine the current percent composition by weight on an air dry basis. These numbers are then compared to the percent composition by weight on an air dry basis of the PNV in the Rangeland Ecological Site Description for the site. To calculate the similarity index, current composition cannot exceed that of PNV. This yields percent allowable. The sum of all allowable percentages equals the similarity index. Table 9, "Total Annual Yield and Composition of Key Areas, Forest Moon Allotment" (p.) summarizes data used to calculate similarity index for the Forest Moon Allotment.

Table 9. Total Annual Yield and Composition of Key Areas, Forest Moon Allotment

Key Area: FM-1				
Ecological Site: Silty 8–10" P.Z. (028BY013NV)				
Potential Vegetative Composition[a]: 30% Grasses, 5% Forbs, 65% Shrubs				
Total Annual Production (air dry lb/ac)[a]: 700 (Favorable), 500 (Normal), 350 (Unfavorable Year)				
Date: 6/8/2010	**Current Production (air dry lb/ac)**	**Current % Composition by Weight (air dry)**	**PNV % Composition by Weight (air dry)[a]**	
Plant Common Name				**% Allowable**
forbs	70	4%	2–5%	4%
winterfat	1754	96%	40–50%	50%
Total Production:	**1824**		**Similarity Index:**	**54%**
Date: 10/18/1989	**Current Production (air dry lb/ac)**	**Current % Composition by Weight (air dry)**	**PNV % Composition by Weight (air dry)[a]**	
Plant Common Name				**% Allowable**
Indian ricegrass	20	5%	15–25%	5%
squirreltail	5	1%	5–10%	1%
winterfat	402	92%	40–50%	50%
bud sagebrush	11	2%	2–8%	2%
Total Production:	**438**		**Similarity Index:**	**58%**
Date: 7/10/1978	**Current Production (air dry lb/ac)**	**Current % Composition by Weight (air dry)**	**PNV % Composition by Weight (air dry)[a]**	
Plant Common Name				**% Allowable**
squirreltail	—	1%	5–10%	1%
Indian ricegrass	—	3%	15–25%	3%
annual forb	—	2%	—	—
winterfat	—	94%	40–50%	50%
Wyo. big sagebrush	—	trace	—	—
Douglas rabbitbrush	—	trace	2%	—
Total Production:	—		**Similarity Index:**	**54%**
Key Area: FM-2				
Ecological Site: Shallow Calcareous Loam 8–10" P.Z. (028BY011NV)				
Potential Vegetative Composition[a]: 50% Grasses, 5% Forbs, 45% Shrubs				
Total Annual Production (air dry lb/ac)[a]: 600 (Favorable), 450 (Normal), 250 (Unfavorable Year)				

Date: 6/8/2010 **Plant Common Name**	**Current Production (air dry lb/ac)**	**Current % Composition by Weight (air dry)**	**PNV % Composition by Weight (air dry)[a]**	**% Allowable**
Indian ricegrass	21	2%	20–35%	2%
needleandthread	2	trace	5–15%	—
squirreltail	18	1%	2–5%	1%
gilia	11	1%	2%	1%
long-leaf phlox	10	1%	2%	1%
milkvetch	2	trace	2%	—
annual forb	15	1%	—	—
black sagebrush	628	47%	25–35%	35%
Wyo. big sagebrush	479	36%	—	—
Douglas rabbitbrush	147	11%	2–5%	5%
Total Production:	**1,333**		**Similarity Index:**	**45%**
Date: 7/25/2006 **Plant Common Name**	**Current Production (air dry lb/ac)**	**Current % Composition by Weight (air dry)**	**PNV % Composition by Weight (air dry)[a]**	**% Allowable**
Indian ricegrass	2	trace	20–35%	—
cheatgrass	3	trace	—	—
black sagebrush	1,259	99%	25–35%	35%
Douglas rabbitbrush	4	trace	2–5%	—
Total Production:	**1,268**		**Similarity Index:**	**35%**
Date: 4/12/1989 **Plant Common Name**	**Current Production (air dry lb/ac)**	**Current % Composition by Weight (air dry)**	**PNV % Composition by Weight (air dry)[a]**	**% Allowable**
Indian ricegrass	88	25%	20–35%	25%
needlegrass	18	5%	5–15%	5%
squirreltail	11	3%	2–5%	3%
globemallow	4	1%	2%	1%
other forbs	4	1%	2%	1%
black sagebrush	210	60%	25–35%	35%
Douglas rabbitbrush	7	2%	2–5%	2%
Nevada ephedra	4	1%	3%	1%
spiny hopsage	4	1%	3%	1%
Total Production:	**350**		**Similarity Index:**	**74%**
Date: 07/1978 **Plant Common Name**	**Current Production (air dry lb/ac)**	**Current % Composition by Weight (air dry)**	**PNV % Composition by Weight (air dry)[a]**	**% Allowable**
squirreltail	—	3%	2–5%	3%
Indian ricegrass	—	3%	20–35%	3%
needleandthread	—	trace	—	—
bluegrass	—	trace	—	—
cheatgrass	—	trace	—	—
annual forb	—	2%	—	—
buckwheat	—	1%	2%	1%
milkvetch	—	1%	2%	1%
black sagebrush	—	52%	25–35%	35%
spiny hopsage	—	1%	3%	1%
Wyo. big sagebrush	—	20%	—	—
Douglas rabbitbrush	—	15%	2–5%	5%
Nevada ephedra	—	1%	3%	1%
Total Production:	**—**		**Similarity Index:**	**50%**
Key Area: FM-3				
Ecological Site: Shallow Calcareous Loam 8–10” P.Z. (028BY011NV)				

Potential Vegetative Composition[a]: 50% Grasses, 5% Forbs, 45% Shrubs				
Total Annual Production (air dry lb/ac)[a]: 600 (Favorable), 450 (Normal), 250 (Unfavorable Year)				
Date: 6/9/2010 **Plant Common Name**	**Current Production (air dry lb/ac)**	**Current % Composition by Weight (air dry)**	**PNV % Composition by Weight (air dry)[a]**	**% Allowable**
squirreltail	3	trace	2–5%	—
bluegrass	3	trace	2–5%	—
cheatgrass	3	trace	—	—
other forbs	17	2%	5–10%	2%
black sagebrush	428	48%	25–35%	35%
Nevada ephedra	440	49%	3%	3%
Total Production:	**894**		**Similarity Index:**	**40%**
Date: 6/28/2007 **Plant Common Name**	**Current Production (air dry lb/ac)**	**Current % Composition by Weight (air dry)**	**PNV % Composition by Weight (air dry)[a]**	**% Allowable**
Indian ricegrass	3	2%	20–35%	2%
bluegrass	5	2%	2–8%	2%
squirreltail	2	1%	2–5%	1%
cheatgrass	5	2%	—	—
lupine	1	1%	2%	1%
black sagebrush	169	83%	25–35%	35%
Nevada ephedra	18	9%	3%	3%
Total Production:	**203**		**Similarity Index:**	**44%**
Date: 8/31/1989 **Plant Common Name**	**Current Production (air dry lb/ac)**	**Current % Composition by Weight (air dry)**	**PNV % Composition by Weight (air dry)[a]**	**% Allowable**
Indian ricegrass	—	5%	20–35%	5%
squirreltail	—	3%	2–5%	3%
bluegrass	—	2%	2–8%	2%
galleta	—	1%	3%	1%
cheatgrass	—	2%	—	—
other forbs	—	5%	5–10%	5%
black sagebrush	—	69%	25–35%	35%
Douglas rabbitbrush	—	3%	2–5%	3%
winterfat	—	1%	3%	1%
four-wing saltbush	—	5%	3%	3%
Nevada ephedra	—	4%	3%	3%
Total Production:	**—**		**Similarity Index:**	**61%**
Date: 7/10/1978 **Plant Common Name**	**Current Production (air dry lb/ac)**	**Current % Composition by Weight (air dry)**	**PNV % Composition by Weight (air dry)[a]**	**% Allowable**
Indian ricegrass	—	2%	20–35%	2%
needleandthread	—	4%	5–15%	4%
squirreltail	—	1%	2–5%	1%
annual forb	—	6%	—	—
cryptantha	—	1%	2%	1%
milkvetch	—	1%	2%	1%
black sagebrush	—	71%	25–35%	35%
Nevada ephedra	—	2%	3%	2%
big sagebrush	—	5%	—	—
Douglas rabbitbrush	—	7%	2–5%	5%
Total Production:	**—**		**Similarity Index:**	**51%**
Key Area: FM-4				
Ecological Site: Silty 8–10” P.Z. (028BY0013NV)				

Potential Vegetative Composition[a]: 30% Grasses, 5% Forbs, 65% Shrubs				
Total Annual Production (air dry lb/ac)[a]: 700 (Favorable), 500 (Normal), 350 (Unfavorable Year)				
Date: 6/9/2010 **Plant Common Name**	**Current Production (air dry lb/ac)**	**Current % Composition by Weight (air dry)**	**PNV % Composition by Weight (air dry)[a]**	**% Allowable**
Indian ricegrass	9	1%	15–25%	1%
mentzelia	29	2%	1%	1%
mustard	4	trace	1%	—
winterfat	1,920	98%	40–50%	50%
Total Production:	**1,962**		**Similarity Index:**	**52%**
Date: 7/7/1978 **Plant Common Name**	**Current Production (air dry lb/ac)**	**Current % Composition by Weight (air dry)**	**PNV % Composition by Weight (air dry)[a]**	**% Allowable**
squirreltail	—	trace	5–10%	—
Indian ricegrass	—	1%	15–25%	1%
annual forb	—	3%	—	—
buckwheat	—	1%	1%	1%
winterfat	—	83%	40–50%	50%
Wyo. big sagebrush	—	5%	—	—
Douglas rabbitbrush	—	1%	2%	1%
bud sagebrush	—	4%	2–8%	4%
snakeweed	—	2%	—	—
Total Production:	**—**		**Similarity Index:**	**57%**

[a]from Ecological Site Description

Riparian Data

Proper Functioning Condition (PFC) is a qualitative method for assessing the condition of riparian-wetland areas (Prichard 1998, Prichard 2003). The process is completed by an interdisciplinary (ID) team. The team looks at hydrology, vegetation, and erosion/deposition (soil) characteristics of the site in order to assess the condition of a riparian area. Table 10, "Summary of PFC Assessments on the Forest Moon Allotment" (p.) summarizes the finding of this team (Map 5, "Forest Moon Allotment, Riparian Areas Map" (p. 31)). Additionally, Little Spring, Horse Spring, and an unnamed spring (north of Forest Home) were visited. These three springs support small areas of riparian vegetation, however are dependent upon developments for existence.

Table 10. Summary of PFC Assessments on the Forest Moon Allotment

Riparian Area	Date	Functionality (Notes)
Forest Home Creek	7/27/2010	Proper Functioning Condition; some areas have been ditched for irrigation purposes
South Horse Spring	7/26/2010	Proper Functioning Condition; riparian area is fenced to exclude cattle and horses

Precipitation Data

Annual precipitation greatly influences growing condition of forage species and is often correlated to available forage. Historical climate data from the Western Regional Climate Center at the Lund, Nevada weather station is being used to represent the annual precipitation on the Forest Moon Allotment (2011). Figure 1, "Precipitation Data (1970-2010) from Western Regional Climate Center at Lund, NV" (p.) summarizes annual precipitation data collected since 1980. The 44 year mean annual precipitation for this station is 10.09 inches.

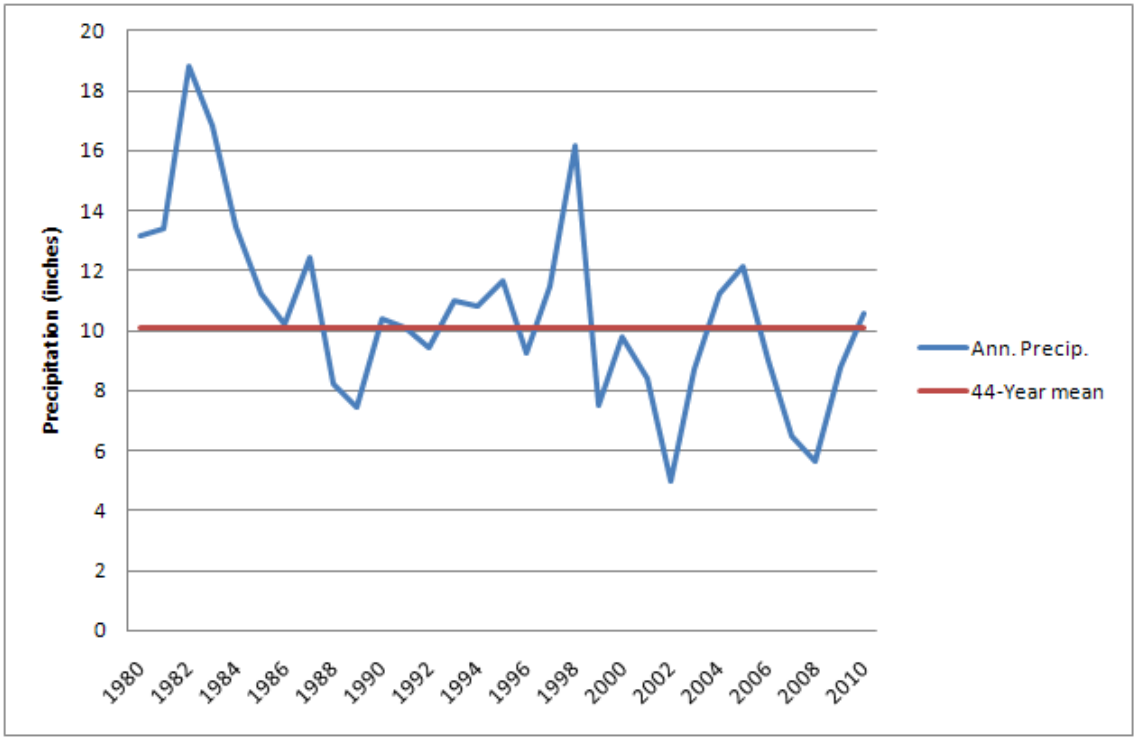


Figure 1. Precipitation Data (1970-2010) from Western Regional Climate Center at Lund, NV

Wildfire Summaries

Also See *Appendix B—Maps* (p.), Map 4, "Forest Moon Allotment, Fire History Map" (p. 30)

The Horse Fire burned approximately 58 acres on the Forest Moon Allotment in July 2006. During March 2007, approximately 55 acres were aerially seeded. The burned area was closed to livestock grazing until recovery objectives were met. On July 28, 2009, an interdisciplinary field visit to this fire was completed. The team noted good perennial recovery. Species observed included needleandthread, Indian ricegrass, galleta, buckwheat, cheatgrass, squirreltail, bitterbrush, ephedra, and mustard. Monitoring data is summarized in Table 11, "Average Density and Cover within the Horse Burned Area, 2007–2009" (p.).

Table 11. Average Density and Cover within the Horse Burned Area, 2007–2009

	Seeded Brushbelts			Unseeded Brushbelts			AA Plots [a]		
Category	**2007**	**2008**	**2009**	**2007**	**2008**	**2009**	**2007**	**2008**	**2009**
Perennial Density[b]	4.59	7.73	6.26	2.74	5.91	6.47	1.56	7.50	5.81

Perennial Cover	5.50%	8.33%	5.00%	6.00%	4.20%	6.00%	3.75%	8.13%	10.25%
Native Annual Forb Cover	0.00%	8.00%	10.33%	0.00%	5.67%	9.67%	0.00%	5.00%	16.25%

[a]Additional Aerial Seeding Plot

[b]Density is measured as plants per square meter.

In June 2006, the Sherwood Fire burned approximately 2,409 acres of which about 700 acres are within the Forest Moon Allotment. During the winter of 2006–2007, 1,902 acres were ground seeded and, in March 2007, 198 acres were aerially seeded. The burned area was closed to livestock grazing until recovery objectives were met. In November and December 2007, a fence was constructed around the burned area to facilitate the livestock grazing closure and protect the reseeded areas. Monitoring data across the entire burned area is summarized in Table 12, "Average Density and Cover within the Sherwood Burned Area with Main Drill Seed Mix, 2007–2009" (p.) and Table 13, "Average Density and Cover within the Sherwood Burned Area with Fire Resistant Drill Seed Mix and Aerial Seed Mix, 2007–2009" (p.).

Table 12. Average Density and Cover within the Sherwood Burned Area with Main Drill Seed Mix, 2007–2009

	Seeded Brushbelts			Unseeded Brushbelts			AA Plots [a]		
Category	2007	2008	2009	2007	2008	2009	2007	2008	2009
Perennial Density[b]	2.94	15.09	4.48	2.25	13.43	3.41	4.10	14.17	7.30
Perennial Cover	4.40%	6.88%	8.67%	2.00%	3.33%	5.89%	5.76%	10.25%	14.40%

[a]Additional Aerial Seeding Plot

[b]Density is measured as plants per square meter.

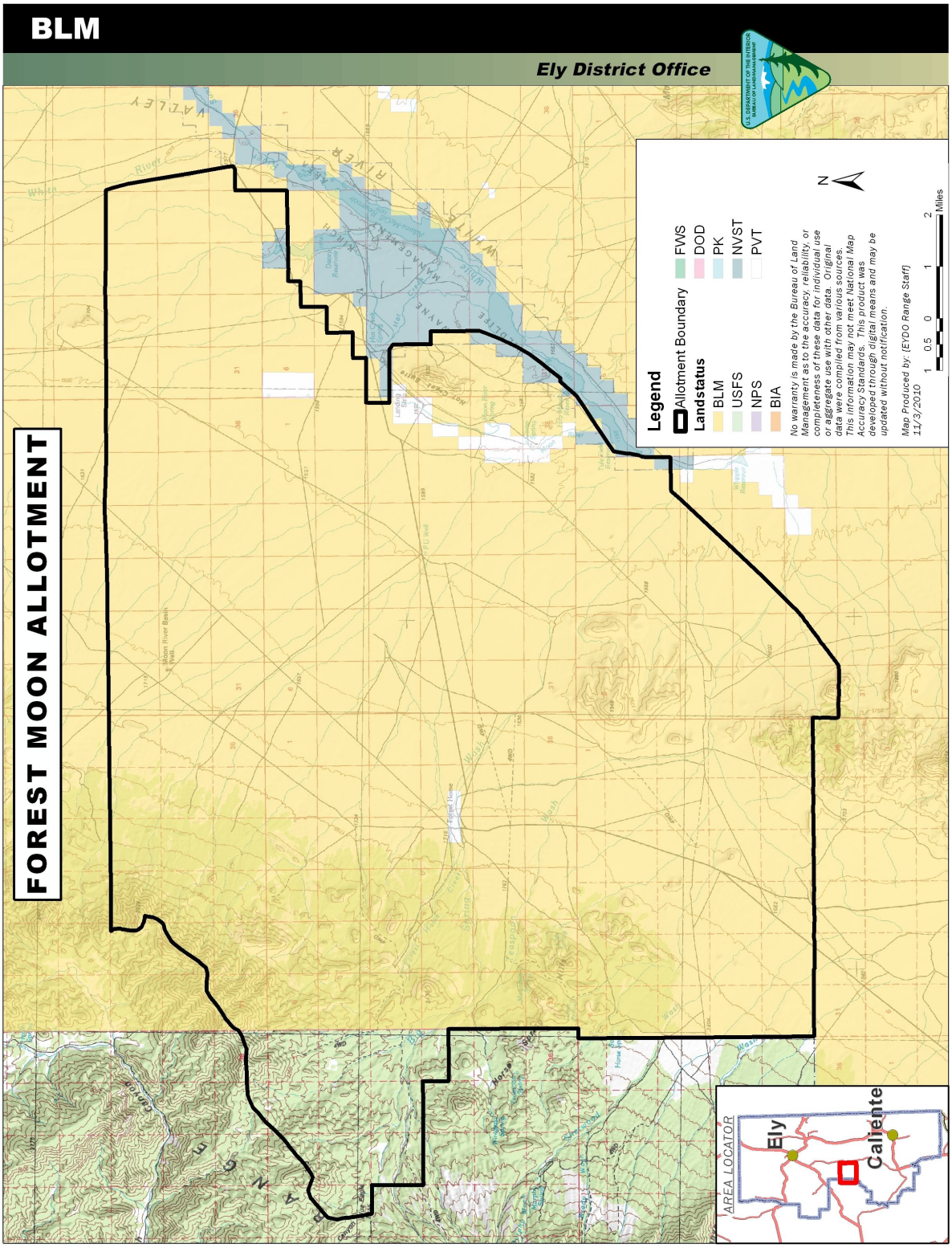
Table 13. Average Density and Cover within the Sherwood Burned Area with Fire Resistant Drill Seed Mix and Aerial Seed Mix[a], 2007–2009

	Seeded Brushbelts			Unseeded Brushbelts			Aerial Seed Mix		
Category	2007	2008	2009	2007	2008	2009	2007	2008	2009
Perennial Density[b]	1.53	11.10	4.23	0.73	7.06	4.54	7.80	21.61	6.63
Perennial Cover	6.00%	6.00%	11.00%	0.00%	5.00%	10.33%	1.00%	5.00%	4.00%

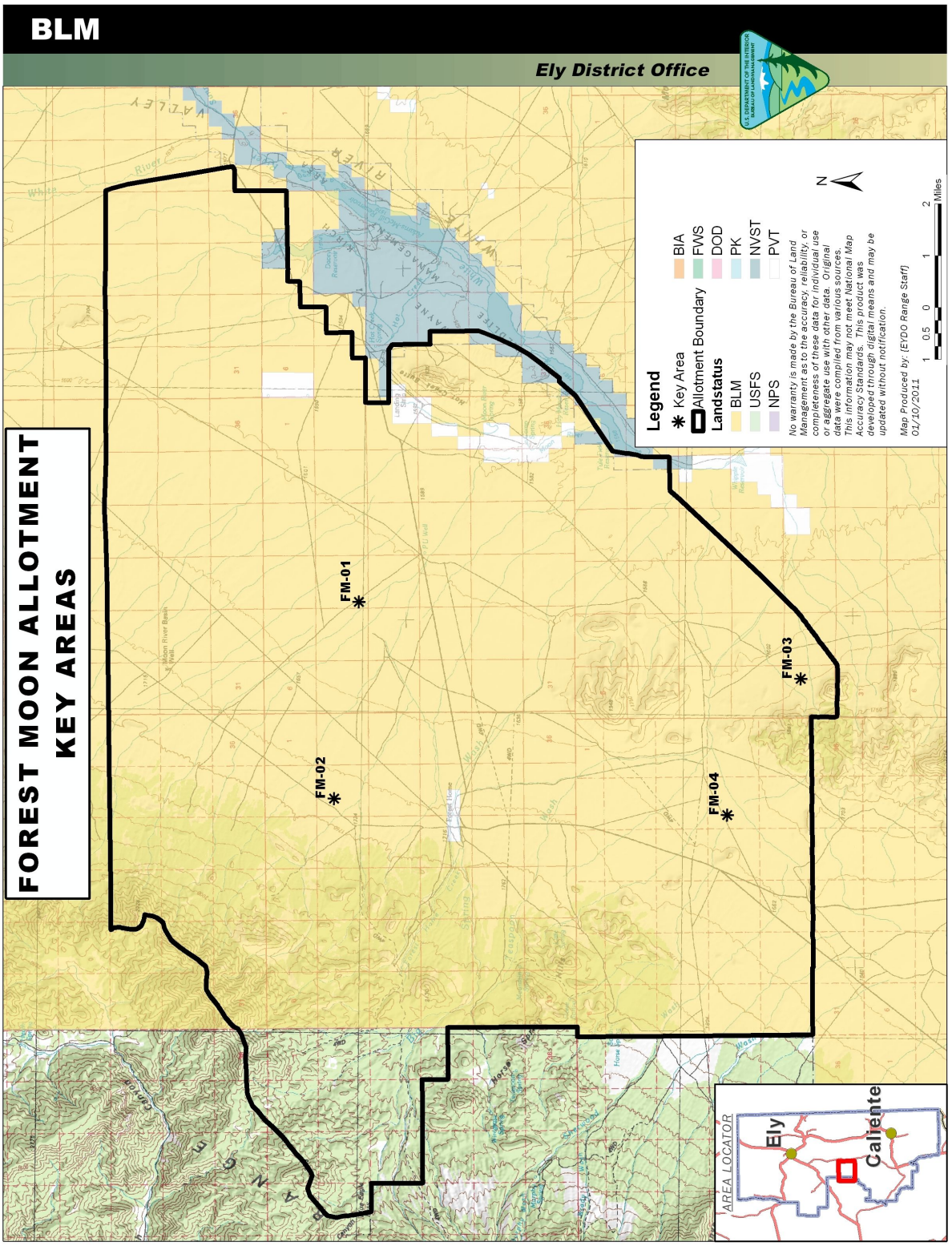
[a]Plots with fire resistant mix were also seeded with the main drill mix.

[b]Density is measured as plants per square meter.

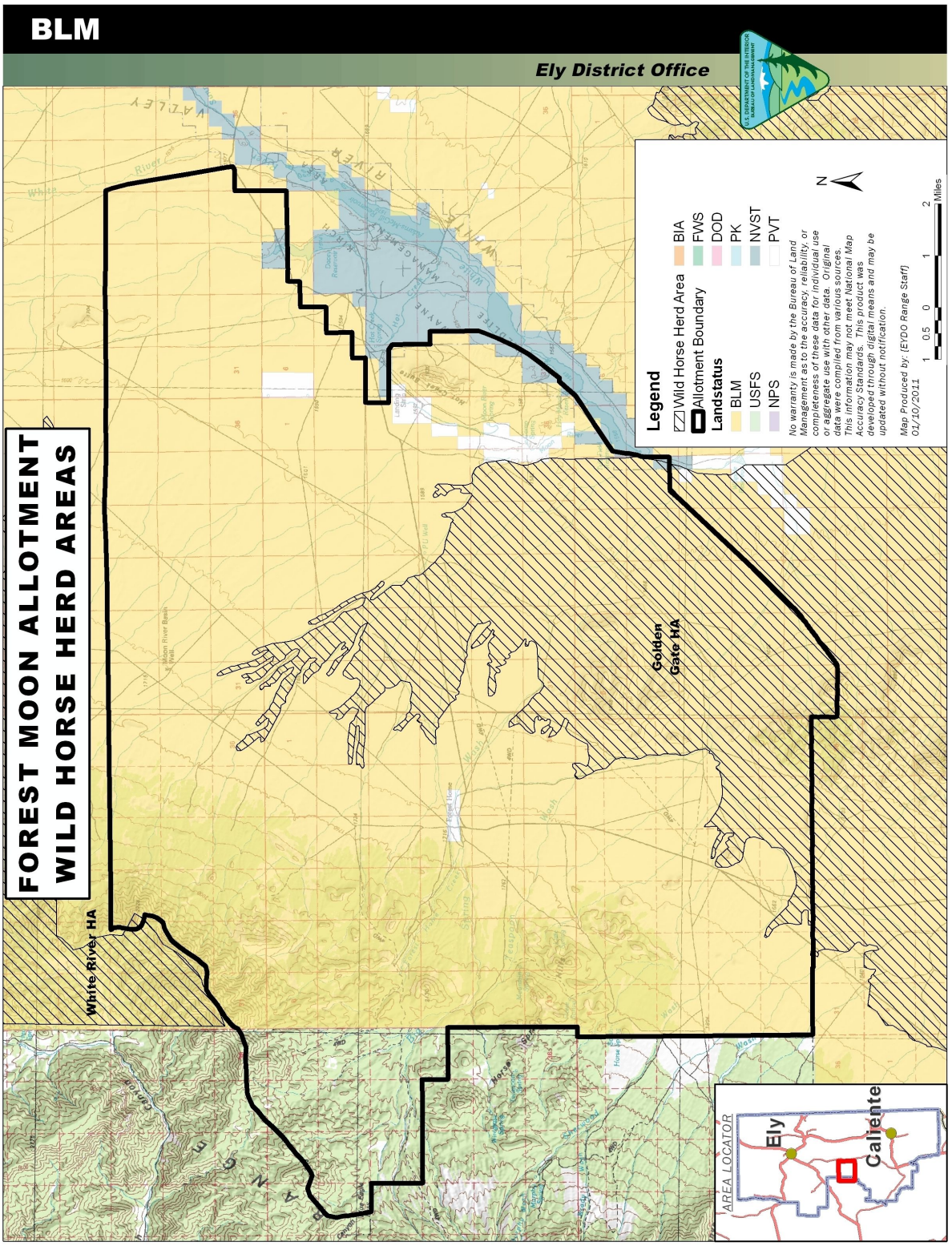
Appendix B—Maps



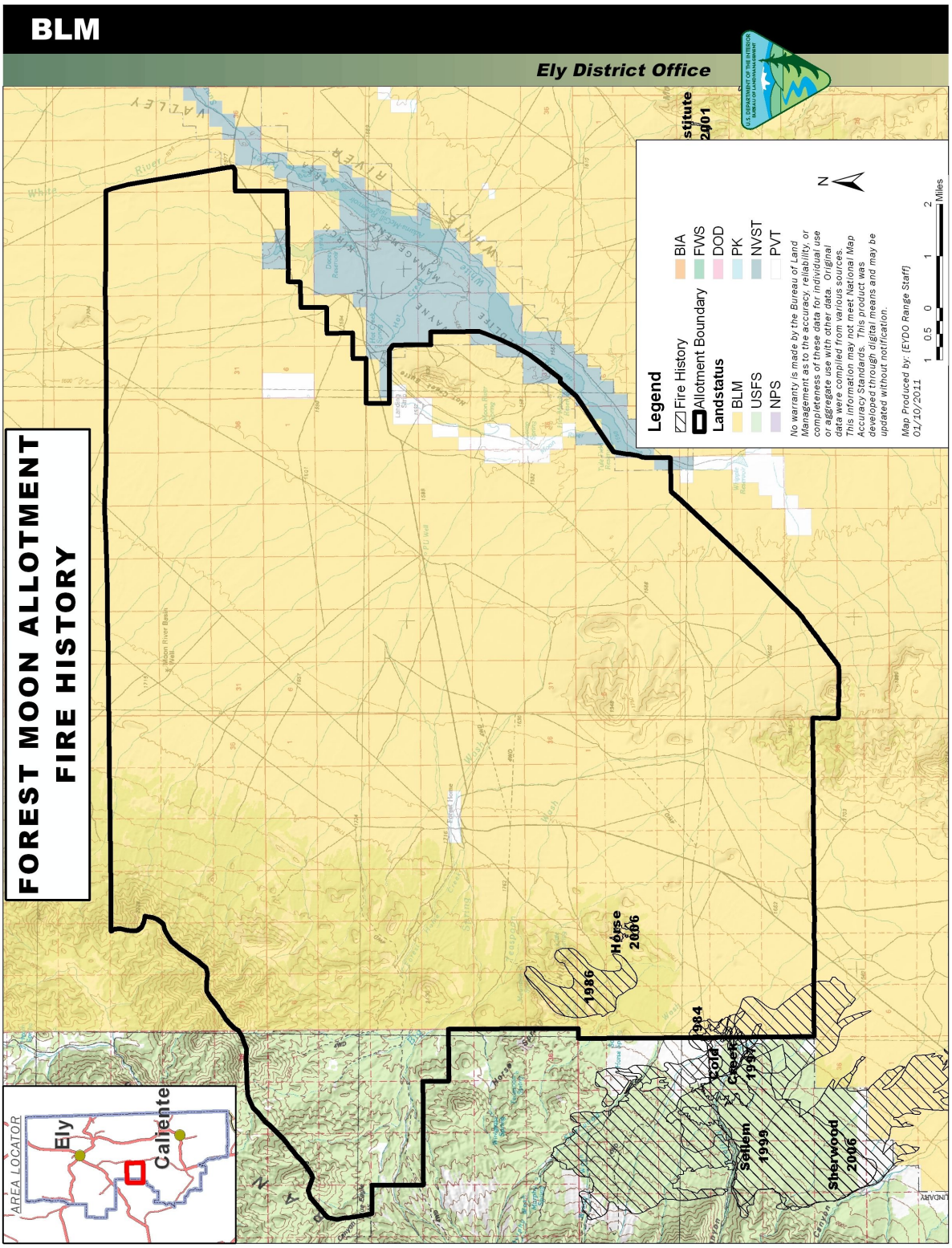
Map 1. Forest Moon Allotment Map



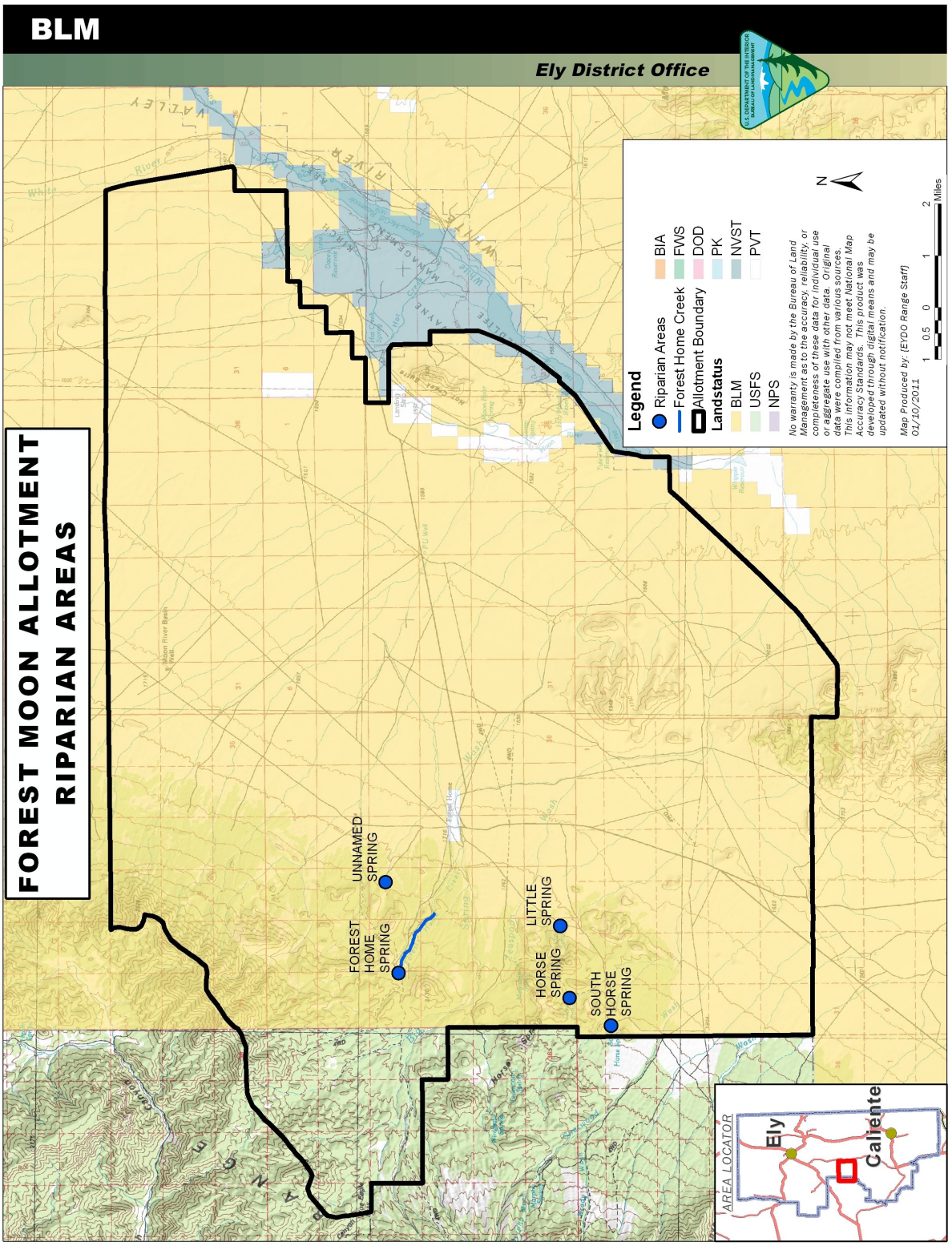
Map 2. Forest Moon Allotment Key Area Map



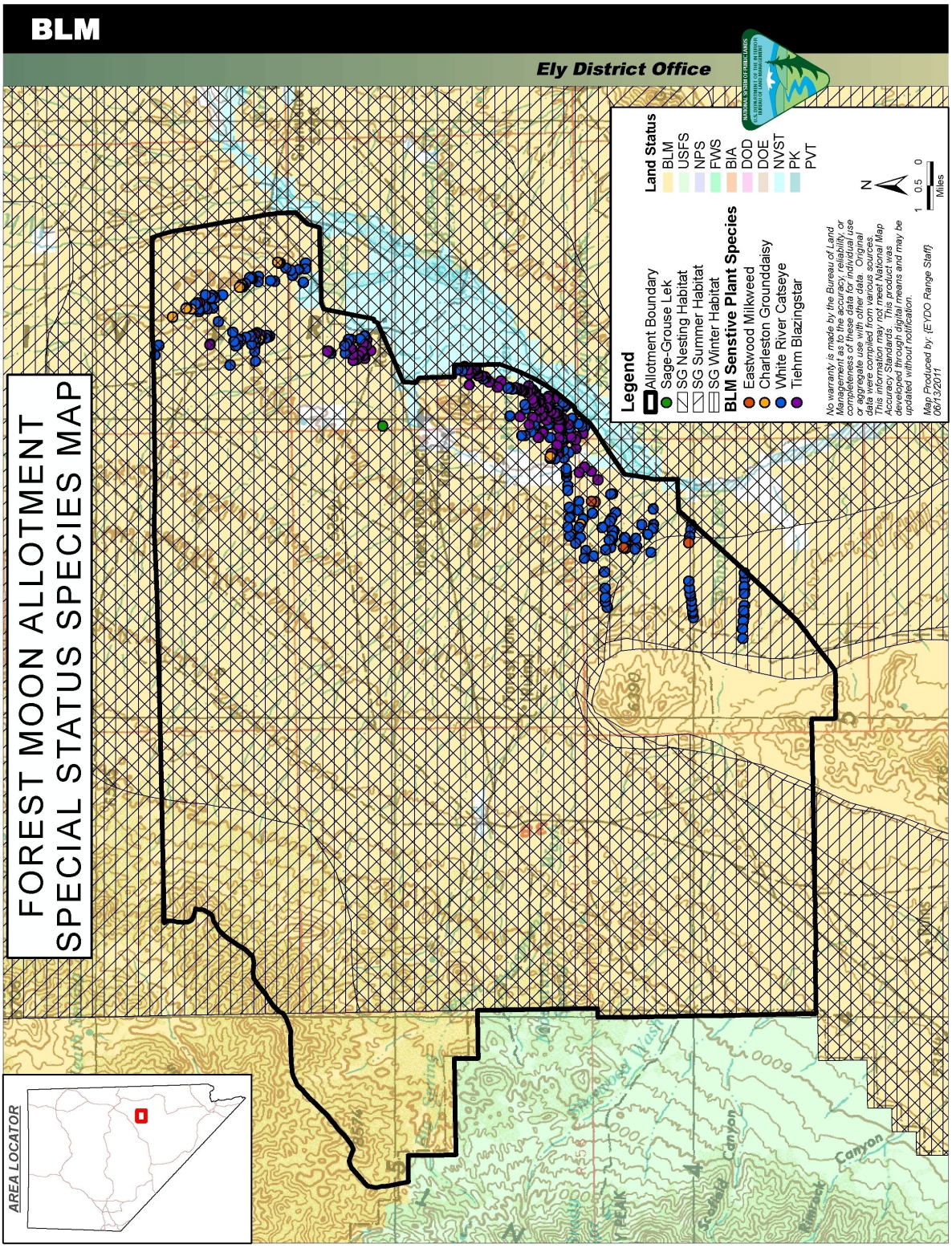
Map 3. Forest Moon Allotment, Wild Horse Herd Areas Map



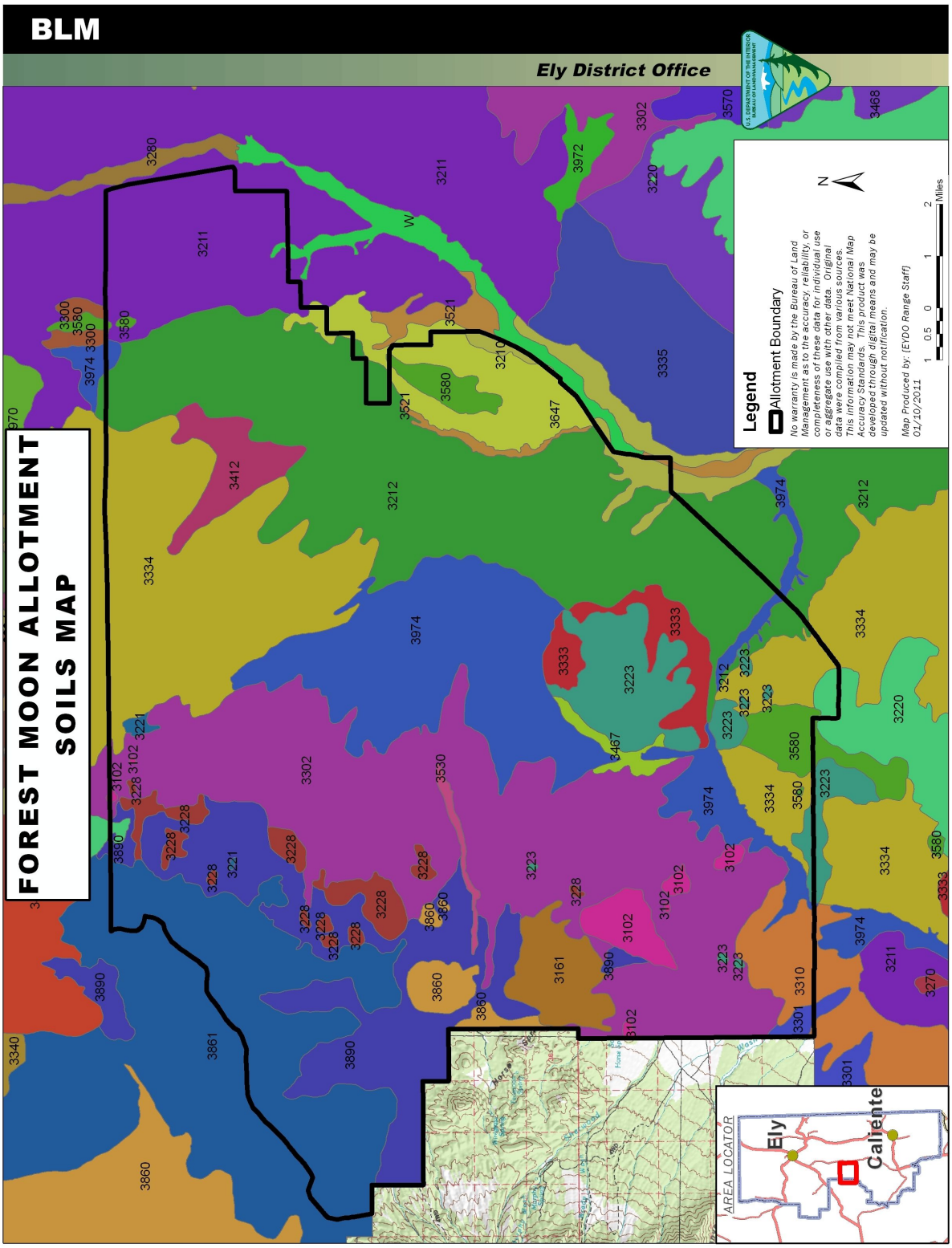
Map 4. Forest Moon Allotment, Fire History Map



Map 5. Forest Moon Allotment, Riparian Areas Map



Map 6. Forest Moon Allotment, Special Status Species Map



Map 7. Forest Moon Allotment, Soils Map